

FY 2005 Annual Report

SPECIALIZED INFORMATION SERVICES

Fiscal Year 2005 Programs and Services

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The Toxicology and Environmental Health Information Program (TEHIP), known originally as the Toxicology Information Program, was established 38 years ago within the National Library of Medicine in the Division of Specialized Information Services (SIS). Over the years TEHIP has provided for the increasing need for toxicological and environmental health information by taking advantage of new computer and communication technologies to provide more rapid and effective access to a wider audience. We continue to move beyond the bounds of the physical National Library of Medicine, exploring ways to point and link users to relevant sources of toxicological and environmental health information wherever these sources may reside. Resources include chemical and environmental health databases and Web-based information resource collections. Development of HIV/AIDS information resources became a focus of the Division several years ago, and now includes several collaborative efforts in information resource development and deployment, including a focus on the information needs of other special populations. Our outreach program has continued to evolve and reach out to under-served communities through implementation of innovative information access-enabling approaches and dissemination of NLM's resources.

The SIS Web server provides a central point of access for the varied programs, activities, and services of the Division. Through this server (<http://sis.nlm.nih.gov>), users can access interactive retrieval services in toxicology and environmental health, HIV/AIDS information, and special population health information; find program descriptions and documentation; and be connected to outside related sources. Continuous

refinements and additions to our Web-based systems are made to allow easy access to the wide range of information collected by this Division. Our usage has continued to increase over the past year with access to all toxicology and HIV/AIDS data free over the Internet.

In FY 2005 SIS continued to balance efforts to enhance and re-engineer existing information resources with efforts to provide new services in emerging areas. We further developed various prototypes that rely on geographical information systems, innovative access and interfaces for consumers, and graphical display of data from information sources. Highlights for 2005 include the following:

Toxicology and Environmental Health Resources

- The **TOXNET** (TOXicology Data NETwork) is a cluster of databases covering toxicology, hazardous chemicals, environmental health and related areas. These databases continue to be a highly used resource, and in FY2005 customer surveys 87% of the respondents reported that they would “return to this site” and “recommend it to others.” In FY2006, enhancements to TOXNET were based on user feedback/requests and routine upgrades/additions of data and capabilities.

Databases in TOXNET include:

- HSDB® (Hazardous Substances Data Bank), a peer-reviewed database focusing on the toxicology of over 4,900 potentially hazardous chemicals.
- IRIS (Integrated Risk Information System), a database from the U.S. Environmental Protection Agency (EPA) containing carcinogenic and non-carcinogenic health risk information on over 500 chemicals.
- ITER (International Toxicity Estimates for Risk), a database containing data in support of human health risk assessments. It is compiled by Toxicology Excellence for Risk Assessment (TERA) and contains over 600 chemical records.
- CCRIS (Chemical Carcinogenesis Research Information System), a scientifically evaluated and fully referenced data bank, developed and maintained by the National Cancer Institute (NCI) with over 8,900 chemical records with carcinogenicity, mutagenicity, tumor promotion, and tumor inhibition test results.
- GENE-TOX (Genetic Toxicology), a toxicology database created by the U.S. Environmental Protection Agency (EPA) containing genetic toxicology test results on over 3,000 chemicals.
- TOXLINE, a bibliographic database providing comprehensive coverage of the biochemical, pharmacological, physiological, and toxicological effects

of drugs and other chemicals from 1965 to the present. TOXLINE contains over 3 million citations, almost all with abstracts and/or index terms and CAS Registry Numbers.

- DART/ETIC (Development and Reproductive Toxicology/Environmental Teratology Information Center), a bibliographic database covering literature on reproductive and developmental toxicology.
- Toxics Release Inventory (TRI), a series of databases that describe the releases of toxic chemicals into the environment annually for the 1987-2003 reporting years. Chemical Information
- ChemIDplus, a database providing access to structure and nomenclature authority databases used for the identification of chemical substances cited in NLM databases. ChemIDplus contains over 368,000 chemical records, of which over 247,000 include chemical structures.
- Household Products Database, which provides information on the potential health effects of chemicals contained in more than 6,000 common household products used inside and around the home.
- Haz-Map, an occupational toxicology database designed primarily for health and safety professionals, but also for consumers seeking information about the health effects of exposure to chemicals and biologicals at work. It links jobs and hazardous tasks with occupational diseases and their symptoms.
- ALTBIB, a bibliographic database on alternatives to the use of live vertebrates in biomedical research and testing.

- Redesign of the **ChemIDplus** application's user interface has significantly enhanced the functionality of this chemical database with over 375,000 chemicals, synonyms, structures, regulatory list information, and links to other databases. The new interface has a simpler search feature for novice users and an advanced search capability for experienced users. A chemical spellchecker has been integrated into the search engine to help the 'non-chemist' users among us. The advanced search enables the user to enter compound identifiers such as Chemical Name, CAS Registry Number, Molecular Formula, Classification Code, Locator Code, and Structure or Substructure. New searchable features also include search and display by Toxicity indicators such as Median Lethal Dose (LD50), by Physical/Chemical Properties such as LogP, and by Molecular Weight.
- **WISER** (Wireless Information System for Emergency Responders) is a tool developed for use by emergency responders during hazardous materials incidents, as well as during training sessions/exercises in preparation for such events. WISER is now available for downloading onto PDAs (Palm OS and Pocket PC)

and Windows laptops/desktops. Through workshops, email feedback, and an on-line bulletin board focus group, user evaluation of WISER has been very positive and included suggestions for new features and data for future versions. There have been over 25,000 downloads of WISER to PDAs and Windows desktops.

- ❑ **Tox Town** developed and deployed two new graphic scenes, Tox Farm and a U.S. Mexico Border scene. Unique environmental hazards of these sites are highlighted, along with a common set of potential hazards common to all the scenes. For example, Tox Farm includes crop fields, agricultural runoff, animal waste, farm animals, barn/silos and meat processing. U.S. – Mexico Border scene includes locations such as maquiladora, crop field, colonia, trash burning, and storm water/sewage.
- ❑ **TOXMAP**, a Geographic Information System (GIS) system that uses maps of the United States to help users visually view data about chemicals released into the environment and easily connect to related environmental health information was enhanced. Improvements in FY2005 included a chemical spellchecker, an improved Frequently Asked Questions module, and addition of graphs to present release facility amounts and release trends since 1987. Addition of superfund sites and other demographic and health data are in progress.
- ❑ **TOXNET, DIRLINE** and **Health Hotlines** were configured and reformatted for optimum use with handheld (PDA) devices.
- ❑ Within a few days after the disaster of hurricane Katrina, SIS compiled and posted a web site on “**Hurricanes: Links to Health Information** including toxicology and environmental health.” This Hurricane site provides information on hurricane recovery, cleanup, and handling hazardous substances. This site was featured by Science.gov and within days, more than 1400 other sites linked to the SIS work product. Other new *Enviro-Health Link* pages this year include **EdCoTox**, links to resources on education, careers, and outreach in toxicology and environmental health; **Indoor Air Pollution** with information links related to the many sources

of indoor air pollution in any home including cleaning and maintenance products, building materials, tobacco smoke, mold, and poor ventilation; **Outdoor Air Pollution** with relevant information links; and **Toxicogenomics** , which is a new scientific subdiscipline that combines the emerging technologies of genomics and bioinformatics to identify and characterize mechanisms of action of known and suspected hazardous substances.

AIDS Information Services

- ❑ NLM-SIS is the project manager for the multi-agency service entitled “AIDSinfo”. This service provides access to AIDS-related clinical trials (through Clinicaltrials.gov), federally-approved treatment guidelines, and prevention and research information. The contract for this service also provides support services for ClinicalTrials.gov and Genetics Home Reference.
- ❑ The HHS AIDSinfo celebrated World AIDS Day in the unveiling of a new AIDSinfo Web site design. The new design offers a more perceptive layout and consistent navigation features. It also includes a new service, Live Help, which allows Web site visitors confidential communication with staff in real time to gain assistance with navigating for HIV/AIDS information resources.
- ❑ The National Library of Medicine (NLM) offers competitive awards to community-based organizations and libraries to design and conduct projects that will improve access to HIV/AIDS related health information for patients, the affected community, and their caregivers. Projects must involve one or more of the following information access categories: Information retrieval, Skills development, State-of-the-art resources, Resource development, and Document access. In FY2005, NLM made thirteen Standard Awards for up to \$50,000 and five Express Awards for up to \$10,000.

Evaluation Activities

- ❑ The SIS Division, including the Environmental Health and Toxicology, HIV/AIDS, and Outreach, Web pages were redesigned with a focus on improved navigation and information organization. They were also upgraded to align with the new NLM web page redesign.
- ❑ In FY2005 eight of the SIS web products were professionally assessed via on-line surveys, focus groups and or online bulletin forums. Feedback was used as input for enhancement and direction for new capability. Products evaluated were WISER, TOXMAP, Tox Town, TOXNET, ChemIDplus, and the Special Population web sites (Asian American, Arctic Health, and American Indian.)
- ❑ The American Customer Satisfaction Index (ACSI) continues to be used to evaluate TOXNET and AIDSinfo. The 2005 score for TOXNET is 76, which ranks it 7th out of 30 “Information /News Websites.” AIDSinfo, which has gone up 4 points in FY2005, has a score of 80 and is ranked 4th. This represents the largest quarter-over-quarter increase reported for all government sites, and likely reflects the response to the redesigned AIDSinfo web pages.
- ❑ Several of the SIS web applications were approved and received certification by the Health On the Net (HON) Foundation as adhering to their international HONcode principles. Approved applications include Tox Town, ToxMap, Toxicology and Environmental Health World Library, and AIDSinfo. Other SIS web applications will be submitted for HON certification in 2006.

Outreach Initiatives

SIS outreach programs reach health professionals, public health workers and the general public especially about health issues that disproportionately impact minorities such as environmental exposures and AIDS. Highlights from FY2005 include:

- ❑ The United Negro College fund Special Programs Corporation awarded 4 HBCUs small grants to develop and implement projects that help to increase the awareness and utilization of NLM resources on campuses and in their communities. This program is now in its third year, and the evaluation reports from earlier grants are providing evidence of successful implementations.

- ❑ The Adopt-a-School program with Woodrow Wilson Senior High School encourages students to take an active interest in consumer health and promotes interest in science. Projects this year included online training about NLM databases, summer internships for students, donation of technological books & periodicals, NLM tours and guest lectures.
- ❑ The Consumer Health Resource Information Service (CHRIS) Project is a faith-based pilot initiative designed by the Medical Education and Outreach group (MEO) of the Oak Ridge Associated Universities (ORAU), Oak Ridge, Tennessee. The purpose of the project is to address minority health disparities through community level intervention and prevention measures in 6 predominantly African American churches in the inner city of Knoxville, TN. The CHRIS project has provided health education, screenings, and services, and each church is equipped with a computer workstation and parish nurses trained to access medical information on the Internet.
- ❑ The mission of the Environmental Health Information Outreach Program is to enhance the capacity of minority serving academic institutions to reduce health disparities through the access, use and delivery of environmental health information on their campuses and in their communities. The 2005 ENHIOP meeting included representation from 12 HBCUs, 3 tribal colleges and 3 Hispanic Serving Institutions.
- ❑ The Native American Information Internship Program provides an opportunity for representatives from American Indian tribes, Native Alaskan villages, and the Native Hawaiian community to learn about the National Library of Medicine, the National Network of Libraries of Medicine and to use that knowledge to improve access to health information and technology for their communities. Support in 2005 included assistance to an intern from Papa Pla Lokahi to develop a culturally appropriate smoking cessation Web site and an interactive game-style tutorial. Also, one of our interns from Hawaii is applying GIS technology to a project looking at potential relations between environmental exposure and health disparities.
- ❑ The Central American Network for Disaster and Health Information (CANDHI) is a group of health science libraries and information centers working together to

enhance local health and disaster information management capacities with a goal of contributing to disaster preparedness in the region. It is a partnership between the U.S. National Library of Medicine, Pan American Health Organization, and United Nations International Strategy for Disaster Reduction. CANDHI consists of centers in Honduras, Nicaragua, El Salvador and Guatemala (with support from U.K. Department of International Development). Additional centers, located in Panama and Costa Rica, were added in 2005 with financial support from the European Community Humanitarian Office (ECHO). The CANHDI centers enable health professionals, government agencies, and others in their countries to access vital information previously unavailable. These libraries have acquired the knowledge, skills, and resources that promote delivery of reliable information including. There are now over 7,000 full-text documents available online.

- ❑ National Medical Association (NMA) is a national professional and scientific organization representing the interests of more than 25,000 physicians and their patients of African descent. SIS continued its collaboration with the NMA to conduct online database training at the six NMA regional meetings held each year.
- ❑ SIS exhibited at over 40 conferences in FY 2005. Several of these provided opportunities for presentations or workshops about NLM's information resources.

Research and Development Initiatives

To meet the mission of providing information on toxicology, environmental health, and targeted biomedical topics to the world, SIS has been developing new ways of presenting the world of hazardous chemicals in our environment to a wider audience.

- ❑ **ToxSeek** is a meta-search engine that enables simultaneous searching of many different information resources on the World Wide Web. The ToxSeek user interface allows selection of resources from a wide range of authoritative sources. It provides integrated search results from targeted systems and displays related concepts. This tool was publically released at the end of FY2005 and in FY2006 will under evaluation and enhancement based on user feedback.

- ❑ **The World Library of Toxicology, Chemical Safety, and Environmental Health** is designed to provide a web portal to global information resources in toxicology, chemical safety, environmental health, and allied disciplines. The World Library is being designed, developed, and maintained by SIS staff, and will provide a cyberhome for an ongoing participatory project in which voluntary representatives from participating nations provide crucial input and feedback to assure credible and high-quality sources of information. The World Library has been populated with information resource sets from twenty countries and collaborations with twenty-five other nations are in progress. With support from the Fogarty International Center, this project is scheduled to release fully developed information resources in FY 2006.
- ❑ A new database, **Drugs and Lactation (LACT)**, was under development in FY05. LACT provides information on drugs and other chemicals to which breastfeeding mothers may be exposed. It includes information on the levels of such substances in breast milk and infant blood, and the possible adverse effects in the nursing infant and includes links to other NLM databases. LACT is scheduled for a public release in mid FY2006.
- ❑ **ToxMystery**, a prototype web site for children between the ages of 7-10, was under development in FY05, and a beta version will be ready for release in FY06. It provides an animated game-like interface, which includes finding potential chemical hazards in a home and includes fun sound effects. Focus groups and feedback from the targeted user community will drive enhancements to Toxmystery.
- ❑ The goal of the **Public Health Law Information Project** is to create in the public domain a searchable database of public health legal information (PHLI) that will be not only a guide for non-specialists, but also an excellent technical resource those who are specialists in the field. The prospective audience includes concerned citizens; non-specialist attorneys faced with public health law issues; public health practitioners, academics and other researchers; government officials, legislators and other policy makers; and any other interested persons who do not

currently have access to PHLI or who seek a richer understanding of such information. In a pilot project, the State of Delaware, the Widener University School of Law, the Delaware Academy of Medicine and SIS are collaborating to produce a searchable database containing statutes, regulations, and other materials from the State of Delaware that pertain to public health.

- ❑ In an intragency collaboration, SIS and the DHHS Office of Public Health Emergency Preparedness (OPHEP) agreed to develop a system for **Radiological Event Medical Management** (REMM). Intended for use by physicians and first responders, REMM will include algorithm-based guidelines for evaluation and management of individuals “exposed” to radiation during accidental releases, use of radiological dispersion devices, and use of improvised nuclear devices.

In these and other new initiatives, SIS continues to search for new ways to be responsive to user needs in acquiring and using toxicology and environmental health, HIV/AIDS, and other specialized information resources.